AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
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Title: CLOCK RECOVERY METHODS AND APPARATUS

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IN THE CLAIMS

Please amend the claims as follows:

1.   (Currently Amended) A method comprising:

receiving an application-layer packet from a source application, wherein the application-layer packet includes a source application-layer timestamp and source data;

generating a source MAC-layer timestamp in response to receiving the application-layer packet, wherein the source MAC-layer timestamp is generated when the application-layer packet enters a medium access control layer of a source device;

producing a medium access control (MAC) packet that includes the [[a]] source application-layer timestamp, the source data, and the [[a]] source MAC-layer timestamp, wherein the source MAC-layer timestamp is based on a substantially synchronized clock between the [[a]] source device and a destination device, and the source MAC-layer timestamp indicates a time when the source data is provided for transmission across a portion of a system that is subject to variable delays;

establishing a fixed transport delay value for the destination device to use to schedule delivery of the source data to a destination application; and

determining a longest observed delay between the source device and the destination device to determine the fixed transport delay value.

2-8.   (Canceled)

9.   (Original) The method of claim 1, further comprising:

transmitting the MAC packet toward the destination device.

10.   (Original) The method of claim 1, wherein the source device is a wireless local area network communications device, and wherein producing the MAC packet is performed by a medium access control device of the source device.

11.   (Currently Amended) A method comprising:

        calculating a transport delay experienced by a medium access control (MAC) packet due to a variable delay between a source device and a destination device, wherein the MAC packet includes a source MAC-layer timestamp, a source application-layer timestamp, and source data, and the transport delay is calculated based on the source MAC-layer timestamp and a destination MAC-layer timestamp generated based on a substantially synchronized clock between the source device and the destination device;

        a destination application using the transport delay and the source application-layer timestamp to perform an application clock recovery process;

        generating a destination MAC-layer timestamp, which indicates an approximate time when the source data is ready to be provided to a destination application, wherein the destination MAC-layer timestamp is based on the substantially synchronized clock, and the destination MAC-layer timestamp and the source MAC-layer timestamp are used in calculating the transport delay;

        establishing a fixed transport delay value for the destination device to use to schedule delivery of the source data to a destination application;

        delaying delivery of the MAC packet to the destination application by a retiming delay, which is approximately equal to the fixed transport delay value minus the transport delay; and

        determining a longest observed delay between the source device and the destination device to determine the fixed transport delay value.

12-17. (Canceled)

18.   (Currently Amended) The method of claim 11, further comprising:

        providing access to the substantially synchronized clock to the destination application, to enable the destination application to calculate a [[the]] destination transport delay and to perform a clock recovery process.

19.   (Original) The method of claim 11, wherein the destination device is a wireless local area network communications device, and wherein calculating the transport delay is performed by a medium access control element of the destination device.

20.   (Currently Amended) A method comprising:

        producing, by a source device, a medium access control (MAC) packet that includes a source application-layer timestamp, source data, and a source MAC-layer timestamp, wherein the source MAC-layer timestamp is based on a substantially synchronized clock between the source device and a destination device, and the source MAC-layer timestamp indicates a time when the source data is provided for transmission across a portion of a system that is subject to variable delays;

        transmitting the MAC packet from the source device to the destination device; [[and]]

        calculating, by the destination device, a transport delay applied to the MAC packet based on the source MAC-layer timestamp and a destination MAC-layer timestamp generated based on the substantially synchronized clock;

        establishing a fixed transport delay value for the destination device to use to schedule delivery of the source data to a destination application;

        the destination device delaying delivery of the source data to the destination application by a retiming delay that is approximately equal to the fixed transport delay value minus the transport delay; and

        generating a destination MAC-layer timestamp, which indicates an approximate time when the source data is ready to be provided to a destination application, wherein the destination MAC-layer timestamp is based on the substantially synchronized clock, and the destination MAC-layer timestamp and the source MAC-layer timestamp are used in calculating the transport delay.

21-22. (Canceled)

23.   (Currently Amended) An apparatus comprising:

        a medium access control (MAC) packet production element, which produces a MAC packet that includes a source application-layer timestamp, source data, and a source MAC-layer timestamp, wherein the source MAC-layer timestamp is based on a substantially synchronized clock between a source device and a destination device, and the source MAC-layer timestamp indicates a time when the source data is provided for transmission across a portion of a system that is subject to variable delays; [[and]]

        a clock that is capable of being used as the substantially synchronized clock; and

        a source application interface, which receives an application-layer packet from a source application, wherein the application-layer packet includes the source application-layer timestamp, the source data, and the source MAC-layer timestamp.

24-25. (Canceled)

26.   (Original) The apparatus of claim 23, further comprising:

        a clock interface, which enables the substantially synchronized clock to be provided to a source application.

27.   (Original) The apparatus of claim 23, wherein the apparatus forms a portion of a wireless local area network device, and the apparatus further comprises:

        an antenna for transmitting the MAC packet over a device-to-device communication link.

28.   (Currently Amended) An apparatus comprising:

a transport delay calculation element, which calculates a transport delay applied to a medium access control (MAC) packet, wherein the MAC packet includes a source MAC-layer timestamp, a source application-layer timestamp, and source data, and the transport delay is calculated based on the source MAC-layer timestamp and a substantially synchronized clock between a [[the]] source device and a [[the]] destination device; [[and]]

a clock that is capable of being used as the substantially synchronized clock;

a destination MAC-layer timestamp generation element, which generates a destination MAC-layer timestamp that indicates an approximate time when the source data will be provided to a destination application, wherein the destination MAC-layer timestamp is based on the substantially synchronized clock, and the destination MAC-layer timestamp and the source MAC-layer timestamp are used in calculating the transport delay; and

a fixed transport delay element, which delays delivery of the source data to a destination application by a retiming delay that is approximately equal to a fixed transport delay value minus the transport delay.

29-30. (Canceled)

31.   (Original) The apparatus of claim 28, further comprising:

a clock interface, which enables the substantially synchronized clock to be provided to a destination application.

32.   (Original) The apparatus of claim 28, wherein the apparatus forms a portion of a wireless local area network device, and the apparatus further comprises:

an antenna for receiving the MAC packet over an air interface.

33.   (Currently Amended) A computer-readable medium having program instructions stored thereon to perform a method, which when executed within an electronic device, result in:

        producing a medium access control (MAC) packet that includes a source application-layer timestamp, source data, and a source MAC-layer timestamp, wherein the source MAC-layer timestamp is based on a substantially synchronized clock between a source device and a destination device, and the source MAC-layer timestamp indicates a time when the source data is provided for transmission across a portion of a system that is subject to variable delays;

        receiving an application-layer packet from a source application, wherein the application-layer packet includes the source application-layer timestamp, the source data, and the source MAC-layer timestamp; and

        providing access to the substantially synchronized clock to the source application.

34-36. (Canceled)

37.   (Currently Amended) A computer-readable medium having program instructions stored thereon to perform a method, which when executed within an electronic device, result in:

calculating a transport delay experienced by a medium access control (MAC) packet due to a variable delay between a source device and a destination device, wherein the MAC packet includes a source MAC-layer timestamp, a source application-layer timestamp, and source data, and the transport delay is calculated based on the source MAC-layer timestamp and a destination MAC-layer timestamp generated based on a substantially synchronized clock between the source device and the destination device;

generating a destination MAC-layer timestamp, which indicates an approximate time when the source data is ready to be provided to a destination application, wherein the destination MAC-layer timestamp is based on the substantially synchronized clock, and the destination MAC-layer timestamp and the source MAC-layer timestamp are used in calculating the transport delay;

establishing a fixed transport delay value for the destination device to use to schedule delivery of the source data to a destination application; and

delaying delivery of the MAC packet to the destination application by a retiming delay, which is approximately equal to the fixed transport delay value minus the transport delay.

38-39. (Canceled)

40.   (Original) The computer-readable medium of claim 37, wherein execution of the method further results in:

providing access to the substantially synchronized clock to the destination application, to enable the destination application to calculate the transport delay and to perform a clock recovery process.